2014 Source Water Assessment

WOONSOCKET CONGREGATION OF JEHOVAH'S WITNESSES TRANSIENT NON-COMMUNITY WATER SYSTEM

Main Findings

- Overall, the results indicate that the WHPA has a Medium susceptibility to contamination. This is an average ranking for the entire wellhead protection area, based on land use, soils and existing water quality. A ranking of MEDIUM means that the water could become contaminated one day. Protection efforts are important to assure continued water quality.
- Impervious surfaces constitute 16% of the WHPA. As the percentage of impervious surfaces increases, what quality declines because of stormwater runoff and intensive use of the land. Protection of existing open space and forested lands will help protect water quality.

For further information please contact: Woonsocket Congregation of Jehovah's Witnesses, 124 Darwin St., Woonsocket, RI 02895.

What you can do to protect your drinking water:

The Woonsocket Congregation of Jehovah's Witnesses Water Supply WHPA encompasses an area with substantial impervious/developed land. As such, unless methods for treatment of stormwater runoff and wastewater management are put into place, the potential for a decline in well water quality is elevated. What you can do to help:

- **Set protection priorities**
  - Implement recommendations in the latest sanitary survey.
  - Inspect the water supply and protection area regularly for potential pollution sources.
  - Know the extent of the land area reserved for protection of the well (a 200' to 400' radius around the well) and ensure that only activities that are both directly related to your water system and non-threatening to water quality occur there.
- **Remove underground storage tanks (USTs)**
  - Tanks that leak gasoline or oil contaminate soil and groundwater. If a UST is located within the protective radius, it should be removed, including any residential home heating oil tanks, which are not regulated by RI DEM.
  - Any tanks in the larger wellhead protection area should be above-ground, located on impermeable surfaces, and contained in an area large enough to hold the complete volume of a spill.
- **Examine septic systems:**
  - Septic systems can contribute bacteria, nitrogen, and other contaminants to groundwater. All tanks, leach fields, and system components should be located outside the protective radius.
  - Inspect septic tanks annually and pump when needed. Hire only registered inspectors, listed at: https://web.uri.edu/owt/files/SepticinspectorsConv_091418_4.pdf

    - If you have an advanced OWTS, ensure that your maintenance contract is renewed annually.
    - Review the factsheet, *Practices to Extend the Life of Your System*, and share with water users and staff: https://web.uri.edu/nemo/wastewater-factsheets-for-homeowners/
- **Evaluate storage areas:**
    - Store hazardous materials outside the protective radius (never within the radius!) and only inside a secure building with an impermeable floor and appropriate spill containment.
- **Restrict parking and vehicle use:**
    - Do not establish a parking area within the protective radius.
    - Ensure vehicle maintenance and washing are performed outside the radius.
    - Keep vehicles and equipment in good repair to prevent leaks and spills.
    - Avoid de-icing salt in the winter.
- **Avoid pesticides, herbicides, and fertilizers:**
    - Fertilizers (even organic varieties) are potential sources of nitrogen and bacteria, while pesticides and herbicides contain chemicals that also can pollute drinking water supplies. Any application of fertilizers, pesticides, and herbicides is prohibited within 200 ft. of any drilled well, and preferably, use or storage of such materials should be avoided throughout the entire protective radius.
- **Practice low-maintenance lawn care:**
    - Minimize lawn area and plant natives that don't require as much maintenance once established.
    - Minimize summer watering or consider allowing the lawn to go dormant during dry periods.
    - Direct any rainwater from paved areas away from the well and onto vegetated areas.
    - Preserve existing trees and naturally vegetated areas on your property, as they help soak up and filter stormwater before it reaches the groundwater.

Table 1- Summary of pollution risk results

Risk Indicator	Calculated Value – Risk Rating (score)	Explanation
Wellhead Protection Area Land Use		
High intensity land use in WHPA	11.7% - Medium (5)	
Existing or potential pollution sources		
Pollution sources within inner protective radius (400' to 200') of well	0 – Low (0)	The 2010 Sanitary Survey indicated no pollution sources within the protective radius of the well.
Pollution sources per acre throughout WHPA, excluding inner protective radius (multiplied by 10)	Limited data - Medium (5)	Public data were reviewed (LUSTs, CERCLIS and RIPDES sites) but are dated and less accurate than a windshield survey. Since limited data were available, risk was set to medium.
Water Quality		
History of contaminant detects within the last 5 years	≤½ MCL - Medium (5)	No violations of the standards for regulated contaminants (excluding bacteria and nitrates) have been identified. However, there have been detections below levels considered acceptable by U.S. EPA. This indicates the need for continued monitoring.
Source water bacteria detects within the last 5 years	Total coliform detection - Medium (5)	Fecal coliform bacteria were not detected. Coliform bacteria were detected 9 times during this

		period. However, re-sampling revealed that the problem had been corrected.
Maximum nitrate – nitrogen (NO_3-N) concentration in the last 5 years	0.30 mg/L – Low (0)	Nitrate levels in groundwater have been consistently low.
Overall Rating	20 (Medium)	Note: A ranking of MEDIUM means that the water could become contaminated one day. Protection efforts are important to assure continued water quality.

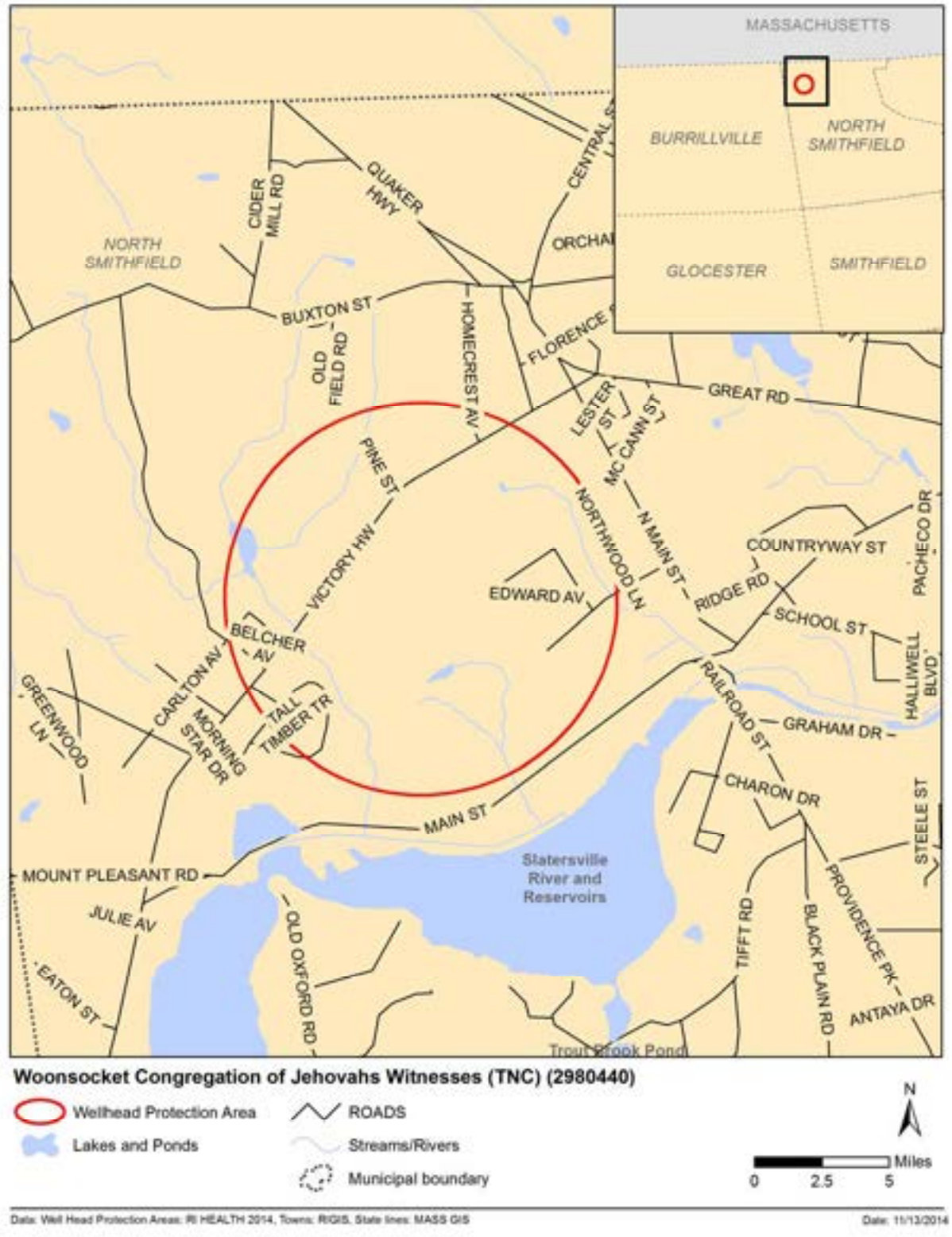

Figure 1- Location of Wellhead Protection Area

UNDERSTANDING THE ASSESSMENT

Why was the assessment done?

The Safe Drinking Water Act (SDWA) Amendments of 1996 required states to develop and implement Source Water Assessment Programs (SWAPs) to analyze existing and potential threats to the quality of the public drinking water throughout the state. Using these programs, most states have completed Source Water Assessments for every public water system -- from major metropolitan areas to the smallest towns. Even schools, restaurants, and other public facilities that have wells or surface water supplies have been assessed. A source water assessment is a study and report, unique to a water system that provides basic information about the water used to provide drinking water. States are working with local communities and public water systems to identify protection measures to address potential threats to sources of drinking water. In Rhode Island, RI HEALTH's Office of Drinking Water Quality administers the Source Water Assessment Program.

What area was evaluated for this assessment?

The Source Water Protection Area, the area evaluated for this assessment, is the critical area surrounding a public water supply well or an intake on a surface source. For a public water supply well this is the wellhead protection area (WHPA). The WHPA is the estimated area from which groundwater and surface water will flow from under severe pumping conditions. This can also be stated as the maximum estimated area that water withdrawn from the well will ever be drawn from. For most bedrock wells this area is a volume dependent circle. For wells in sand and gravel this area is generally not a circle, but an irregular shape determined by sedimentary deposits and pumping rate. The Source Water Protection Area for surface water sources is generally the watershed of the surface waterbody.

Will the potential contamination sources identified in the sanitary survey contaminate my source?

Potential contamination sources identified in sanitary surveys are facilities that typically use, produce, handle or store contaminants of concern, which, if improperly managed, could find their way to a source of public drinking water. It is important to understand that a release may never occur from a potential contamination source, provided good management practices are used. Many potential contamination sources are regulated at the federal level, the state level, or both, to reduce the risk of a release. There are a number of methods that water systems can use to work cooperatively with potential contamination sources. These often involve educational visits and inspections of stored materials.

How should this assessment be used?

This assessment should be used to plan for improved protection of public drinking water sources. Additional information may also be useful such as identification of the 100-year flood plain, tax map information, soils information or high-density development areas. This assessment is a good starting place for planning protection programs. **Communities should act now to protect valuable water supply resources; once contamination occurs clean-up is costly, often technically difficult and sometimes infeasible. Additionally, unprotected watersheds and wellheads can lead to deterioration of water quality that may eventually lead to higher treatment costs.**

EXPLANATION & DETERMINATION OF POLLUTION RISK FACTORS

This Source Water Assessment was completed using the Guide to Updating Source Water Assessments and Protection Plans, Version 3 – 2010. All risk indicator ratings were obtained from this document. A summary of methods as well as calculated risks are presented here.

Risk Factors

Risk Factors: High Intensity Land Use in WHPA

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High intensity land use was determined using Rhode Island GIS (RIGIS) land use data (2011 data). Land uses within the WHPA were calculated using ArcView 10.2 (ESRI) and then aggregated based on land use categories defined in URI Cooperative Extension MANAGE model (Method for Assessment, Nutrient Loading And Geographic Assessment). The MANAGE model documents a method for informing decisions about environmental risks associated with land use. MANAGE includes data management models for ArcView 10.2, an Excel predictive model, and various tools for viewing land use/soils and landscape data. Technical documentation for the MANAGE model can be obtained from the University of Rhode Island Non-Point Education for Municipal Officials (NEMO) program.

The MANAGE land use categories group land uses based on pollution potential (ie: developed recreation and urban open space are considered to have the same potential pollution loading, so they are grouped into the "Recreation" category). The MANAGE model then further assigns 11 land use categories into a group identified as high intensity land use (Appendix B). High intensity land uses are considered to have elevated risk of potential contamination when compared to non-high intensity land uses. The percentage of high intensity land use in the WHPA under study is then compared to the rating scale for the risk indicator: High intensity land use in WHPA.

A summary of all land uses found within the Woonsocket Congregation of Jehovah's Witnesses Water System WHPA reveals that 11.7% of the WHPA is considered to be developed as high intensity land use, corresponding with a risk rating of Medium (figure 2, table 2). The high intensity land use consists of high density residential (3.8%), medium-high density residential (1.4%), commercial (3.8%), institution (1.0%) and orchards (1.7%) land uses. The institutional use is the Jehovah's Witness facility. The commercial uses are mainly retail and restaurants. The small area of commercial use near the Jehovah's Witness facility appears to be a large garage associated with a home, there are multiple trucks in the driveway, but the location is not identified as a business based on internet searches of the address.

Table 2 - Land uses within WHPA

Land Use (MANAGE Code & Description)	Total Area (acres)	% of Total Land Use
[1] HD Res.(>8 /ac)*	8.4	3.8%
[2] MHD Res.(4-7.9/ac)*	3.1	1.4%
[3] MD Res.(1-3.9/ac)	56.9	25.8%
[4] MLD Res.(0.5-0.9/ac)	0.6	0.3%
[5] LD Res.(<0.5/ac)	2.4	1.1%
[6] Commercial*	8.4	3.8%
[7] Industrial*		
[8] Roads*		
[9] Airports*		
[10] Railroads*		
[11] Junkyards*		
[12] Recreation	2.3	1.0%
[13] Institution*	2.1	1.0%
[14] Pasture	4.7	2.1%
[15] Cropland*		
[16] Orchards*	3.7	1.7%
[17] Brush	1.1	0.5%
[18] Forest	94.5	42.8%
[19] Barren		
[20] Wetland (includes forested wetlands)	30.6	13.9%
[21] Water	1.8	0.8%
[22] Transitional		
Total (acres)	**220.8**	**100%**
Total High intensity land use	**25.8**	**11.7%**

Note: An asterisk indicates a High intensity land use.

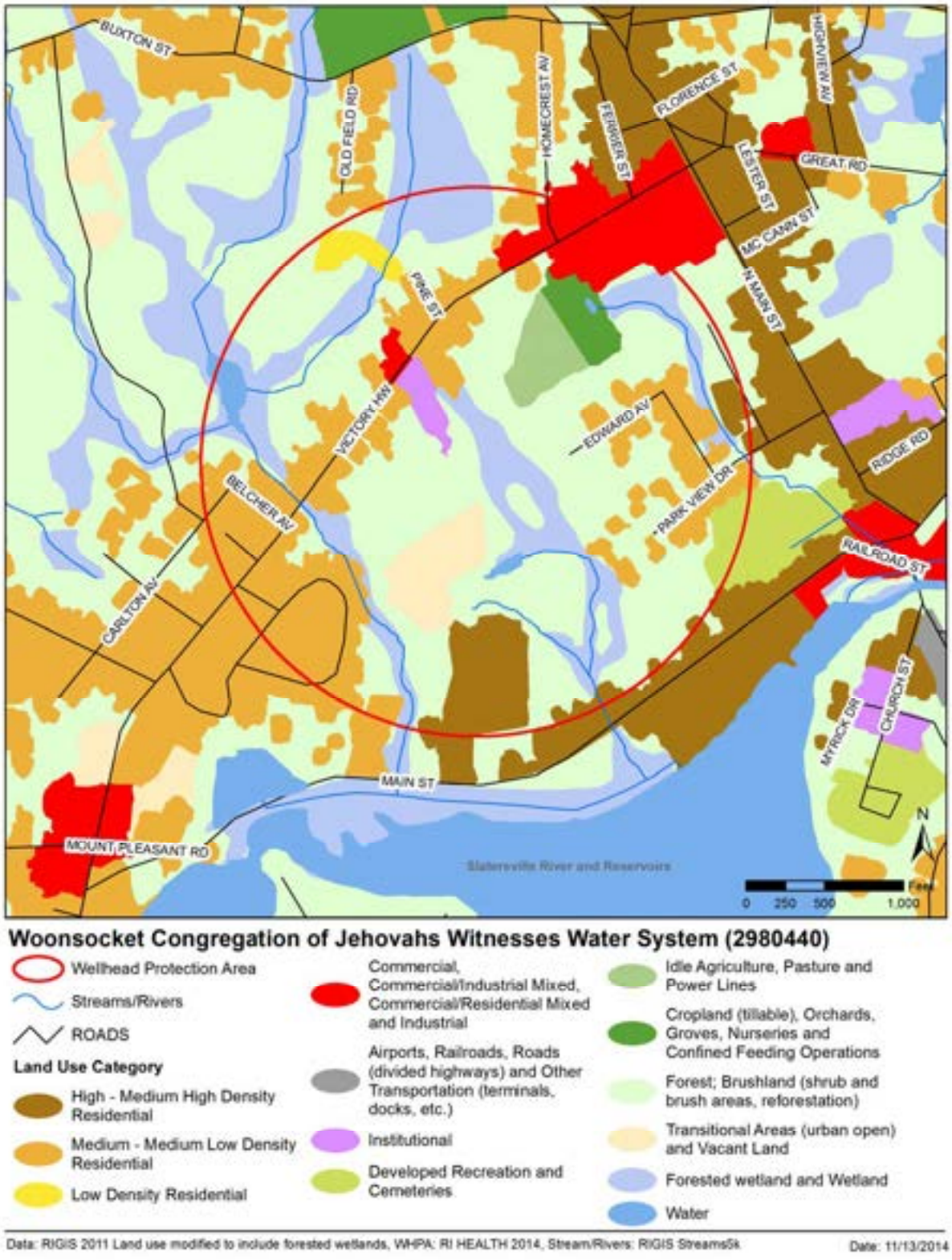


Figure 2 - Land use in the vicinity of the WHPA

Risk Factors: Pollution Sources Within the Inner Protective Radius and Per Acre Throughout the WHPA

Information on the presence or absence of pollution sources within the inner protective radius of the well can usually be obtained through the Rhode Island Department of Health Sanitary Surveys and Waivers. Pollution sources within the inner protective radius of a well are likely to contaminate the well due to the close proximity. The most recent sanitary survey of the Woonsocket Congregation of Jehovah's Witnesses Water System WHPA was completed on July 29, 2010, and did not indicate the presence of any pollution sources within the inner protective radius of the well (Appendix C). Therefore, this risk factor was set at low.

Potential pollutant sources throughout the WHPA also have the potential to contaminate the groundwater feeding the well. The greater the number of potential pollutant threats the greater the chance of well contamination. Potential pollutant sources are facilities that are not actively polluting but may be at greater risk of polluting groundwater simply because of their use of chemicals. Businesses such as drycleaners, gas stations, hardware and garden supply shops as well as areas with high intensity cultivation all use chemicals that have the potential to contaminate groundwater. The best method for determining potential pollution sources in the WHPA is a direct windshield survey of the area. Public data available through RIGIS is also useful, but not as comprehensive as a windshield survey.

This Source Water Assessment was limited to utilizing existing data to determine pollution sources on a per acre basis in the WHPA. The following data sources were obtained from RIGIS and reviewed:

- Leaking Underground Storage Tanks (LUSTs) (from 1992-2012),
- Rhode Island Pollution Discharge Elimination System (RIPDES) sanitary permits (last updated in 2000)
- Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS/Superfund) sites (last updated in 1997).

No data points were located within the Woonsocket Congregation of Jehovah's Witnesses Water System WHPA. The sanitary survey did not provide any additional information on pollution sources on a per acre basis throughout the WHPA. Due to the limited up-to-date data available, the risk factor: Pollution Sources Per Acre Throughout the WHPA was set at medium to be protective.

Risk Factors: History of Contaminant, Bacteria and Nitrate-Nitrogen Detections

Laboratory results for samples collected from the active well in the Woonsocket Congregation of Jehovah's Witnesses Water System WHPA were obtained from Rhode Island Department of Health and used to determine risk factors: history of contaminant, bacteria and nitrate-nitrogen detections within the last five years. These data provide direct evidence of the quality of well water.

Risk Factor: History of contaminant detections within the last 5 years

All contaminant detections recorded in the laboratory records (excluding bacteria, nitrogen, sodium, calcium and magnesium) for the past five years were reviewed. Data were available for 2010 only (Appendix D). A risk rating for each contaminant above the detection limit was assigned based on the Maximum Contaminant Level (MCL). The MCL is based on either Rhode Island or U.S. Environmental Protection Agency (EPA) drinking water standards and advisory levels. The highest risk rating observed for each well was used to set the total risk rating for that well. This risk factor for Woonsocket Congregation of Jehovah's Witnesses Water System WHPA was set at medium; No violations of the standards for regulated contaminants (excluding bacteria and nitrates) have been identified. However, there have been detections below levels considered acceptable by U.S. EPA. This indicates the need for continued monitoring.

Risk Factor: Source Water Bacteria Detections within the last 5 years

All available bacteria data for the past five years were reviewed. Data were available for 2010 through 2014. The maximum pollution risk rating for bacteria is based on the number of positive total coliform detections at the source per the number of total coliform samples collected over the five year period. It is assumed that routine bacterial analysis is for total coliform bacteria and that analysis for fecal coliform only occurs after detections of total coliform are observed. Heterotrophic Plate Count (HPC) values are not used in this analysis. It is assumed for the purposes of this Source Waster Assessment that if fecal coliform samples are collected and return a result in violation of RI HEALTH regulations that the cause of the contamination was identified and corrected. Therefore, no WHPAs are ranked in the extreme category for the purposes of the Source Water Assessment Program.

This risk rating for Woonsocket Congregation of Jehovah's Witnesses Water System WHPA was set at Medium – fecal coliform bacteria were not detected. Coliform bacteria were detected 9 times during this period. However, re-sampling revealed that the problem had been corrected.

Risk Factor: Maximum nitrate-nitrogen (NO_3-N) concentration in the last 5 years

Nitrate-Nitrogen data from the past five years of data were reviewed. Data were available for 2010 through 2014. The maximum observed nitrate-nitrogen value was 0.30 mg/L NO_3-N. This nitrate-nitrogen value falls under a risk rating of low – nitrate levels in groundwater have been consistently low.

Additional Risk Indicators/Assessment Steps

The following risk factors are not part of the official risk rating, but provide additional information on potential risks to the groundwater resource.

Risk Factor: High Intensity Land Use on Excessively Permeable Soils in the WHPA

The percentage of high intensity land uses on excessively permeable soils in the WHPA is also a risk indicator (figure 3, table 3). Excessively permeable soils (as obtained from the RIGIS 2014 Soils data) allow contaminants and water to rapidly infiltrate into the ground. Excessively permeable soils when located in conjunction with high intensity land uses increase the risk of well contamination. Therefore, when evaluating WHPAs, locating potential pollution sources that lie on excessively permeable soils is an important component of the risk analysis. In the Woonsocket Congregation of Jehovah's Witnesses Water System WHPA 5.8 acres of high intensity land uses are located on excessively permeable soils, which is equivalent to 2.6% of the total land use, corresponding with a risk rating of low.

Table 3 - Risk indictor rating for High Intensity Land Use on Highly Permeable Soils Throughout the WHPA (from Guide to Updating Source Water Assessments and Protection Plans, V3, December 2010 (Attachments, 2003 risk rating indictor table).

Indicator	Low (0)	Medium (5)	High (10)	Extreme (25)
2. High intensity land use on highly permeable soils throughout the WHPA.	< 5%	5 - 14%	15 - 30%	> 30

In addition to evaluating the percentage of high intensity land use on highly permeable soils, soil hydrogroup was combined with water table depth to reveal likely pathways for water flow and pollutant movement. Soils are placed within four hydrogroups: A – highly permeable soil, B – moderately permeable soil, C – slow infiltration soil and D – wetland/very slow infiltration soil. Group A soils, or the most permeable soils, generally consist of well

sorted sands and gravel that easily and quickly allow water and soluble contaminants to move toward a working well. In contrast, group C & D soils are slowly permeable, with high water tables that promote runoff to nearby surface waters rather than infiltration.

Water table depth is the depth under the surface where the soil is saturated with water. In areas with sandy soils and a deep water table, pollutants can easily infiltrate to underlying groundwater reservoirs. Alternatively, soils with slow permeability have lower infiltration rates and tend to have a higher water table. In New England high water table wet soils are almost always connected to wetlands, intermittent drainage ways and small streams, forming an extended drainage network where pollutants can easily flow from hydraulically active soils to surface waters. Although these indicators are extremely useful in identifying pathways for contaminant movement to receiving waters, soils are less reliable indicators in urban areas where natural drainage patterns have been altered by stream channelization, artificial fill and subsurface drains.

Further investigation into the soils within Woonsocket Congregation of Jehovah's Witnesses Water System WHPA reveals that the soils are a mixture of all soils types (figure 4). Soils encompassing the areas around the stream network in and around the WHPA consist of hydrogroup C and D soils with high watertables indicating an extended wetland drainage flow pattern extending beyond the stream banks, which may channel water away from the wellhead. The A and B soils are expected to allow rapid infiltration of water into the groundwater and could become problematic if contaminants are released in these areas, especially in close proximity to the wellhead.

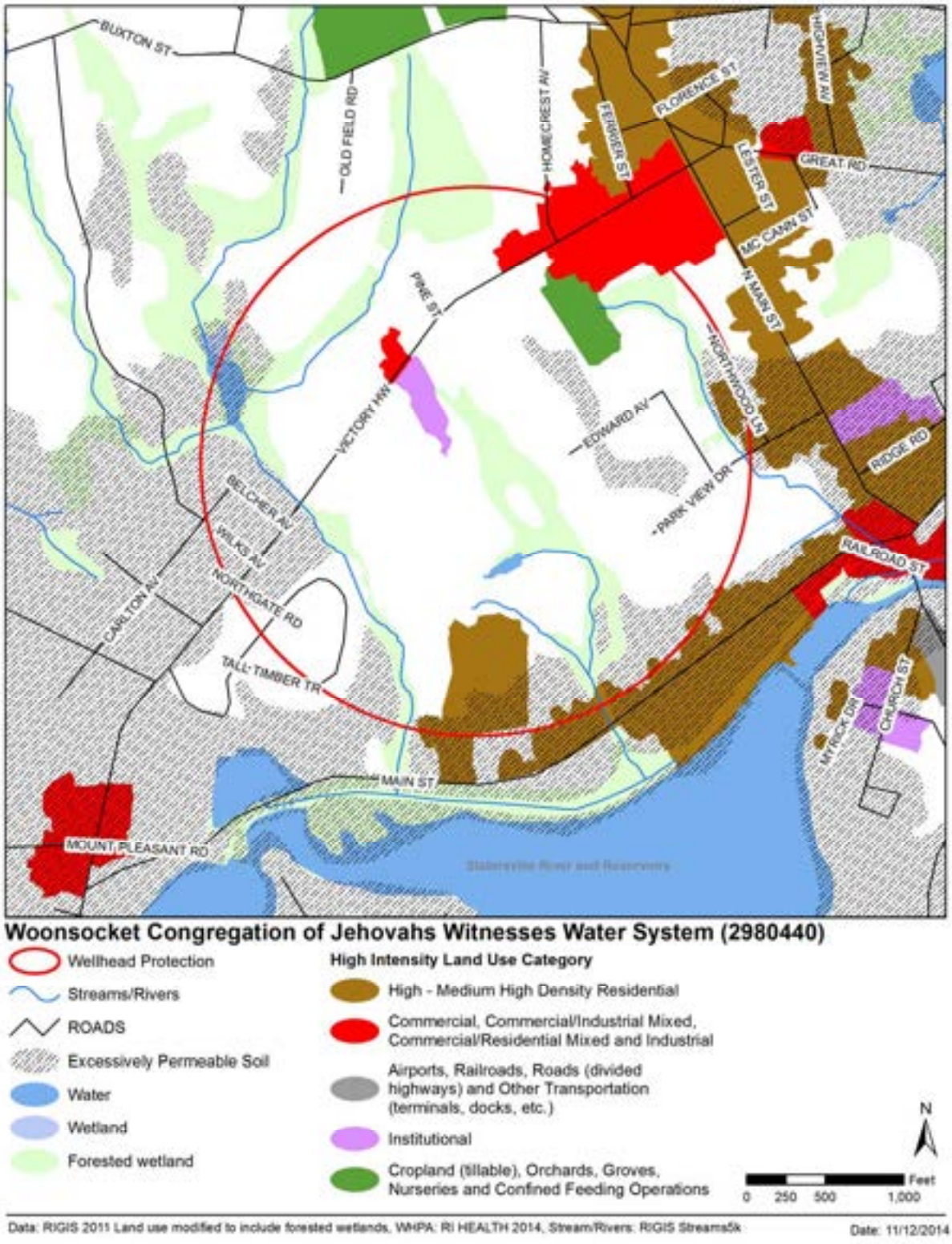


Figure 3 - High intensity land use and excessively permeable soils

1
2

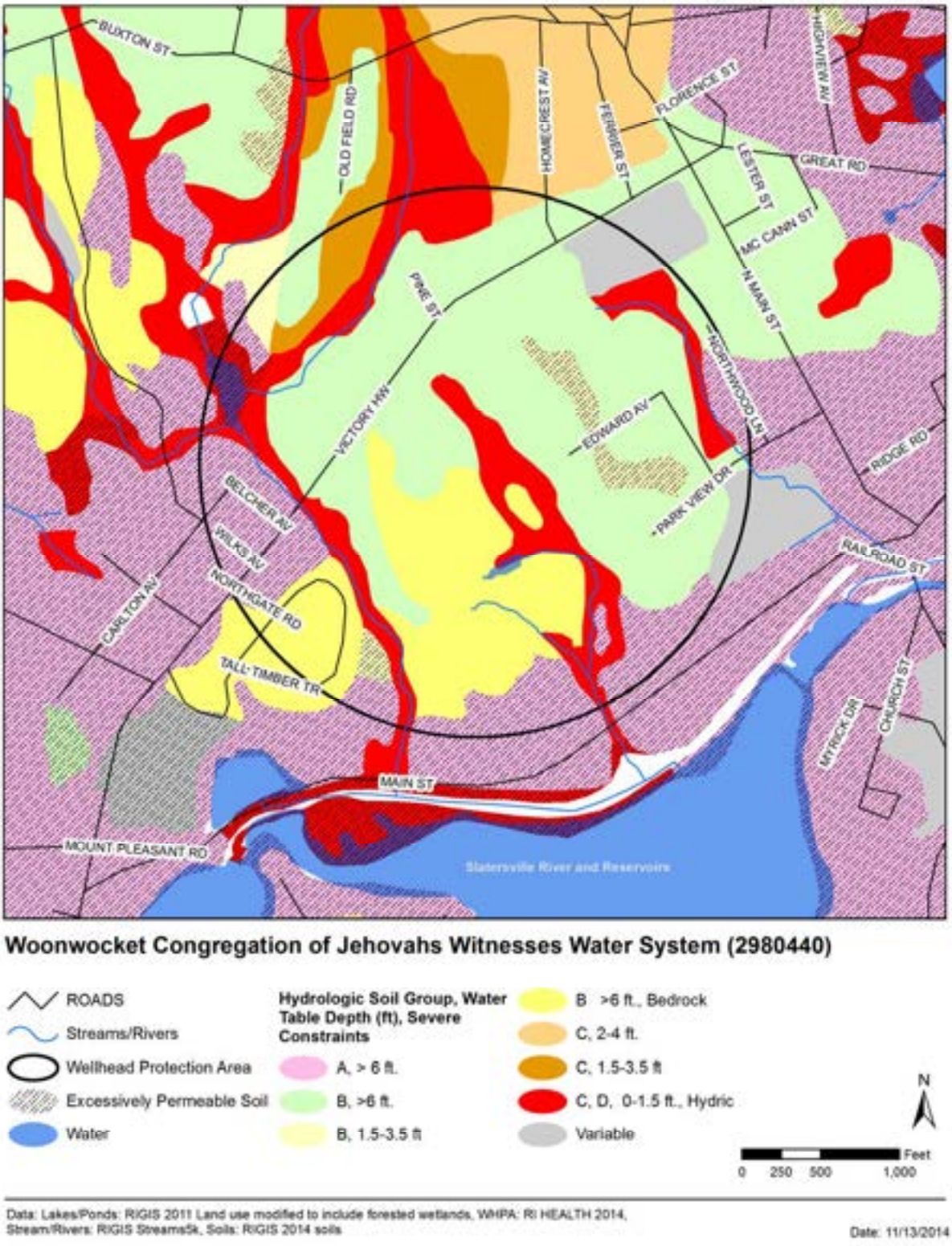


Figure 4 - Hydrologic soil group and water table depth

Impervious surfaces in WHPA

Impervious surface analysis is an important consideration when performing a pollution risk assessment. In general, the amount of storm water runoff is positively correlated with the amount of impervious surface in a WHPA. Therefore, in a more densely developed area, there will be higher amounts of storm water runoff then natural areas. Storm water runoff can transport harmful contaminants into surface water bodies as it flows over impervious surfaces such as roads, parking lots and commercial facilities. Impervious surfaces also impede precipitation from reaching groundwater, reducing recharge.

Impervious surface coverage for the Woonsocket Congregation of Jehovah's Witnesses Water System WHPA was calculated in ArcView 10.2 (ESRI) using the Rhode Island 2011 Impervious Surface Coverage available from RIGIS. The percentage of impervious surface found in Woonsocket Congregation of Jehovah's Witnesses Water System WHPA is 16%, corresponding to a risk rating of high (table 4, figure 5).

Table 4 - Risk indictor rating for Percentage of Impervious Surface Throughout the WHPA (from Guide to Updating Source Water Assessments and Protection Plans, V3, December 2010).

Indicator	Low (0)	Medium (5)	High (10)	Extreme (25)
Impervious Surface (% in WHPA)	< 10%	10 - 14%	15 - 25%	> 25

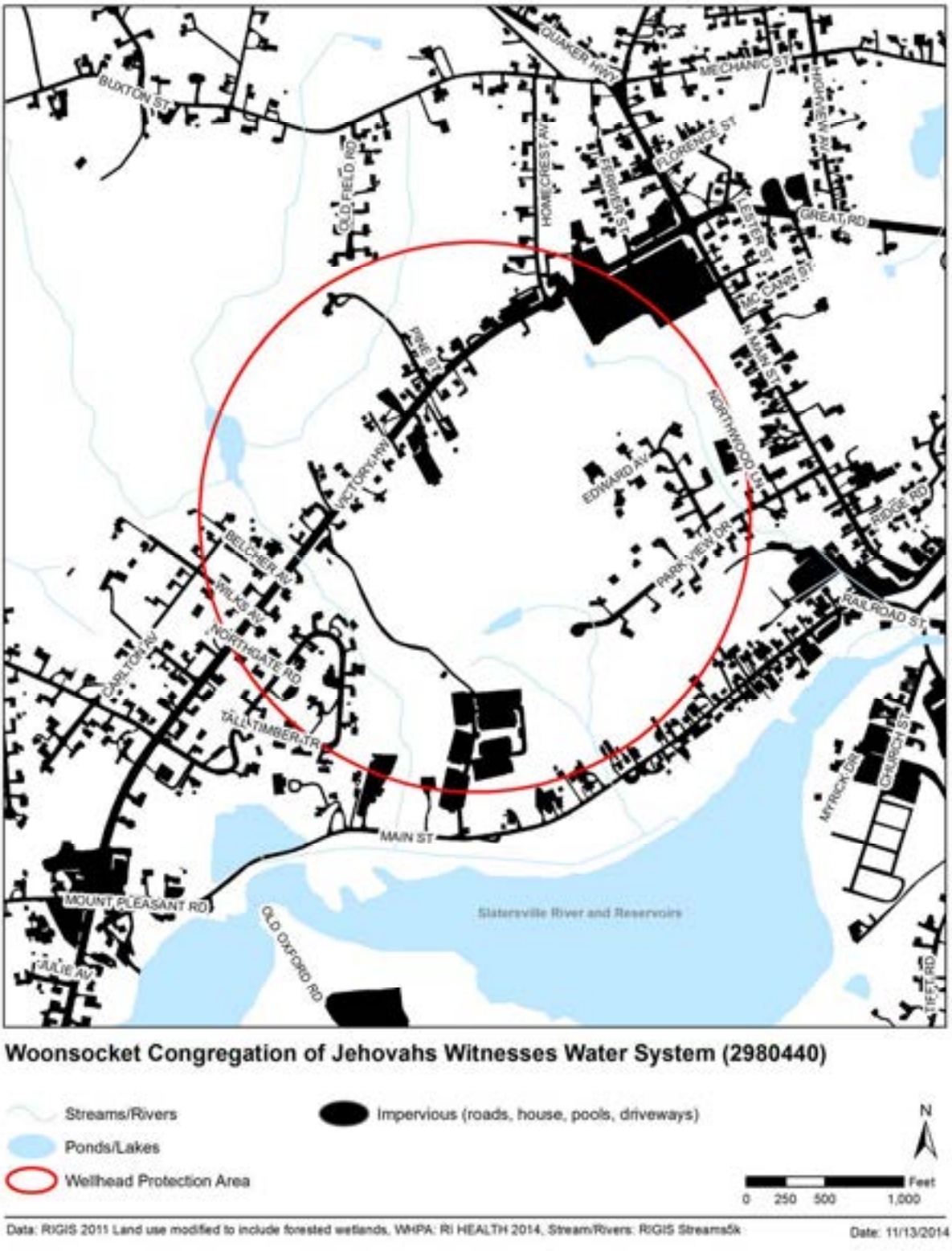


Figure 5 - Impervious surfaces in the vicinity of the WHPA

References:

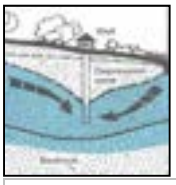
RI HEALTH. 2012. *Rules and Regulations Pertaining to Public Drinking Water, as amended September 2012* (R46-13-DWQ). Retrieved from: http://sos.ri.gov/documents/archives/regdocs/released/pdf/DOH/7059.pdf

RI HEALTH and RI NEMO. 2010. *Guide to Updating Source Water Assessments and Protection Plans Version 3 – December 2010.*

U.S. Environmental Protection Agency. (2012). *2012 Edition of the Drinking Water Standards and Health Advisories* (EPA 822-S-12-001). Washington, DC: Office of Water. Retrieved from: http://water.epa.gov/action/advisories/drinking/upload/dwstandards2012.pdf

Appendix A: 2003, 2010 and 2014 SWA Risk Rating Summaries

From: RI HEALTH and RI NEMO. 2010. ***Guide to Updating Source Water Assessments and Protection Plans Version 3 – December 2010.***



Wellhead Protection Area Pollution Risk Rating
Revised October, 2006

Wellhead Protection Area RISK INDICATOR	RATING			
	Low	Medium	High	Extreme
	0	5	10	25
Wellhead Protection Area land use				
1. High intensity land use.	< 10%	10 - 24%	25 - 40%	> 40%
Existing or potential pollution sources				
2. Pollution sources within inner protective radius (400' or 200') of well.	0	1	2 - 3	> 3
3. Pollution sources per acre throughout WHPA, excluding inner protective radius. Multiply this number by 10.	< 0.1	0.1 - 0.5	0.5 - 1	> 1
Water quality				
4. History of contaminant detects within last 5 years.	Trace [1]	≤1/2 MCL	>1/2 MCL	> MCL (Violation)
5. Source water Bacteria detects within 5 years.	<5% of samples have Total coliform detection	>5% of samples have Total coliform detection	Fecal coliform detected, cause identified and corrected	Fecal coliform violation[2]
6. Maximum nitrate-nitrogen (NO_3-N) concentration in last 5 years.	≤ .5 mg/l	0.5 - 2 mg/l	> 2 - 5 mg/l	> 5 mg/l
Maximum	*0*	*30*	*60*	*150*
Overall Ranking - Sum of all risk ratings.	**0 – 19**	**20 – 59**	**60 – 100**	**> 100**

Notes:
[1] Trace = Less than 10% of the contaminant MCL
[2] It is assumed for the purposes of the SWAP that if Fecal coliform samples are collected and return a result in violation of RI HEALTH regulations that the cause of the contamination was identified and corrected. Therefore, no bacterial samples are ranked in the extreme category for the purposes of the SWAP program.

Appendix B – MANAGE Land use categories cross referenced to RIGIS (2011) land use categories.

RIGIS Land Use ID	RIGIS Land Use Description	MANAGE ID	MANAGE Land Use Description	High Intensity Land Use
111	High density residential	1	HDR	x
112	Medium high density residential	2	MHDR	x
113	Medium Density Residential	3	MDR	
750	Transitional Areas	3	MDR	
114	Medium Low Density Residential	4	MLDR	
115	Low Density Residential	5	LDR	
120	Commercial & Services	6	COMMERCIAL	x
152	Commercial /Industrial mixed	6	COMMERCIAL	x
151	Commercial/residential mixed	6	COMMERCIAL	x
147	Other transportation	6	COMMERCIAL	x
130	Industrial	7	INDUSTRIAL	x
141	Roads	8	ROADS	x
142	Airports	9	AIRPORTS	x
143	Railroads	10	RAILROADS	x
145	Waste Disposal Areas	11	JUNKYARDS	x
163	Cemeteries	12	RECREATION	
161	Developed Recreation	12	RECREATION	
162	Urban Open Space	12	RECREATION	
170	Institutional	13	INSTITUTION	x
144	Water and Sewage Treatment Facilities	13	INSTITUTION	x
250	Idle Agriculture	14	PASTURE	
210	Pasture	14	PASTURE	
146	Power Lines	14	PASTURE	
240	Confined feeding operations	15	CROPLAND	x
220	Cropland	15	CROPLAND	x
230	Orchards, groves, nurseries	16	ORCHARDS	x
300	Brushland	17	BRUSH	
420	Coniferous forest	18	FOREST	
410	Deciduous forest	18	FOREST	
430	Mixed forest	18	FOREST	
710	Beaches	19	BARREN	
760	Mixed barren	19	BARREN	
730	Rock outcrop	19	BARREN	
720	Sandy areas other than beaches	19	BARREN	
740	Strip mines, quarries, gravel pits	19	BARREN	
610[2]	Forested Wetland	20	WETLAND	
600	Wetland	20	WETLAND	
500	Water	21	WATER	

Notes:

1. The table presented above was used in the SWAP reports and is provided here for reference.
2. RIGIS code 610 is RI NEMO code and is not found in RIGIS data. 2011 Land use data were processed in ArcGIS 10.2 to determine which forested areas were most likely forested wetlands. These areas were then re-coded from forest to forested wetlands.
3. The small amount of commercial area is a commercial/residential mix. RIGIS 2011 land use identifies it as industrial, but upon researching the site, it is a commercial/residential building.

Appendix C – Sanitary Survey (most recent)

WS ID: RI2980440

Department of Health

Three Capitol Hill
Providence, RI 02908-5097

TTY: 711
www.health.ri.gov

CERTIFIED MAIL

September 28, 2010

Robert Neri
Woonsocket Congregation of Jehovah's Witnesses
124 Darwin Street
Woonsocket, RI 02895

Dear Mr. Neri:

Enclosed please find the Sanitary Survey Report for the Woonsocket Congregation of Jehovah's Witnesses Transient Non Community Public Water System. Department of Health personnel conducted the survey on July 29, 2010. This survey was conducted in accordance with Section 16.4g of the Rules and Regulations Pertaining to Public Drinking Water (R46-13-DWQ).

The narrative portion of the survey is divided into three sections. Section I lists Significant Deficiencies that were identified during the survey. Significant Deficiencies should have been addressed within ten (10) working days of the survey. Section II contains Minor Deficiencies that were identified during the survey. Minor Deficiencies must be addressed and/or corrected within forty-five (45) days of the receipt of this survey package. Section III, General Comments and Recommendations, is intended to provide you with additional information on proper water system operations, which may further safeguard your water system. **A written response is required within 45 days of receipt of this survey, specifying how and when each deficiency has been or will be corrected and/or addressed.** In addition, please provide any missing information, as indicated by highlighted areas throughout this report.

Please feel free to contact the Office of Drinking Water Quality at (401) 222-6867 if you should have any questions concerning this survey or if you wish to discuss this matter further.

Thank you for your time and continued cooperation.

Sincerely,

Garry S. Smith
Natural Resources Engineering Technician IV
Rhode Island Department of Health
Office of Drinking Water Quality

PARTIES PRESENT

NAME	ORGANIZATION
Garry S. Smith	DWQ
Andrew Hall	DWQ
Robert Neri	Woonsocket Congregation of Jehovah's Witnesses

SYSTEM OVERVIEW

The Woonsocket Congregation of Jehovah's Witnesses water system is a non-community public water system serving an estimated transient population of 175 members. The system consists of a drilled well and a worship hall.

Source #1, Drilled Well #1 is geographically located N42.00136° W071.58949°. The 400' deep, 6" diameter steel well casing was drilled on May 11, 2010 by Dalmik Well Drilling Company. A 1.5 HP FPS Series V Model#7FV15S4-3W230 4" submersible pump with a capacity of 7-gpm is set at 380' within the well.

Water storage for the system consists of a Well-X-Trol, Model #wx-203 diaphragm type pressure tank, located within the utility room. The tank has a total volume of 32-gallons. A Franklin Electric SubDrive pump system maintains a constant 50-psi pressure within the distribution. A 10,000-gallon fire storage tank maintains fire sprinkler system and is not connected to potable water system according to staff. There is no auxiliary power for this small water supply.

SECTION I - SIGNIFICANT DEFICIENCIES

To protect your public drinking water supply contamination the following significant deficiencies must be corrected within ten days. Authority: R46-13-DWQ Rules and Regulations Pertaining to Public Drinking Water.

No observations were recorded in this category.

SECTION II - MINOR DEFICIENCIES

Items in this section must be corrected and/or addressed within forty-five (45) days of the receipt of this Survey.

1. FACILITY	CATEGORY	DESCRIPTION
DS001 - DISTRIBUTION SYSTEM	Distribution System	Does system maintain records on high hazard connections requiring backflow prevention devices?
Comments: Hot water tank needs a vacuum breaker installed on the cold water feed.		

SECTION III - GENERAL COMMENTS AND RECOMMENDATIONS

2. The well cap should be secured with a locking device, to insure that unauthorized access to the wells cannot occur to prevent possible vandalism and contamination of the groundwater supply.

3. It is recommended that you consider the installation of an emergency generator to ensure that the water system remain operational during extended power outages. Please be aware that when a water system loses all pressure in its service mains due to a water pipe break, or when an extended power loss results in total loss of pressure in service lines because pumps cannot operate to replenish water into pressurized tanks; such a condition is known as dewatering. Dewatering of a water system could result in contaminants being easily drawn into the supply. The installation of a generator should negate this potential threat.

4. Should water system operators choose not to install auxiliary power at the site, and then be advised that any time this water system experience an extended power outage, that a written policy put in place to enable appropriate water system disinfection and testing to ensure potability of this water system?

5. All the pressurized storage tanks should be maintained in accordance with the manufacturer's recommendations to ensure proper operation of water system equipment along with potability of supply. Examples of maintenance would be maintaining proper air charge on respective tank and occasional flushing of these tanks to remove any accumulated sediment.

6. Please be reminded that **proper disinfection** must be practiced whenever intrusive work on the system is performed or if your system is ever dewatered. After appropriate disinfection and flushing, additional bacteriological samples should be taken to verify that the system is coliform free.

7. You are reminded that this office must be notified of any modifications to your system as per R46-13-DWQ, Sec.4.1. An **Application for Approval** form must be submitted for any planned significant modifications including equipment upgrades and design improvements to your system. Routine maintenance on a water system, such as pipe and valve replacement or repair does not need to be reported. **In Kind Replacement** form must be submitted for replacement of pumps, storage/pressure tanks or treatment components that are functionally equivalent to the original components.

POSITIVE TCR SAMPLES

No Positive Samples were reported in the past year.

REJECTED TCR SAMPLES

No Rejected Samples were reported in the past year.

MONITORING VIOLATIONS (With Number)

No monitoring violations were reported in the past year.

MCL VIOLATIONS

No maximum contaminant level violations were reported in the past year.

OTHER VIOLATIONS (With Number)

Violation Number	Violation Date	Violation Type	Compliance Period

No other violations were reported in the past year.

Appendix D – Laboratory results (summarized for 5 year period leading up to this report)

Risk Factor 4 - History of Contaminant Detections in Source Water

FAC NAME	COLL DATE	ANALYTE NAME	CONC.	Unit	Standard	Units	Standard Reference	Risk
DRILLED WELL #1	27-May-10	CHLORIDE	5.3	MG/L	250	mg/l	USEPA Secondary Standard	Low
DRILLED WELL #1	27-May-10	COLOR	0	CU	15	CU	USEPA Secondary Standard	Low
DRILLED WELL #1	27-May-10	HARDNESS, TOTAL (AS CACO3)	36	MG/L	NA			NA
DRILLED WELL #1	27-May-10	IRON	0.055	MG/L	0.3	MG/l	National Secondary Drinking Water Regs.	Medium
DRILLED WELL #1	27-May-10	MANGANESE	0.014	MG/L	0.05	MG/l	National Secondary Drinking Water Regs.	Medium
DRILLED WELL #1	27-May-10	ODOR	0	UNITS	3	threshold odor numbers	National Secondary Drinking Water Regs.	Low
DRILLED WELL #1	27-May-10	PH	6.9	PH	6.5-8.5		National Secondary Drinking Water Regs.	NA
DRILLED WELL #1	27-May-10	SULFATE	13	MG/L	250	mg/L	National Secondary Drinking Water Regs.	Low
DRILLED WELL #1	27-May-10	TURBIDITY	2.6	NTU	NA			NA
							Overall risk rating	**Medium**

FAC NAME	COLL DATE	ANALYTE NAME	CONC.	Unit	Standard	Units	Standard Reference	Risk
DRILLED WELL #1	27-May-10	SODIUM	4.8	MG/L				
							No risk assigned on the basis of sodium	

Risk factor 5 - Source Water Bacteria Dections within the last 5 years

FAC NAME	COLL DATE	ANALYTE NAME	CONC.	Unit	Standard	Units	Standard Reference	Risk
DRILLED WELL #1	27-May-10	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	06-Aug-10	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	25-Oct-10	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	07-Feb-11	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	04-Apr-11	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	03-Aug-11	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	17-Oct-11	COLIFORM (TCR)	1					x
DISTRIBUTION SYSTEM	20-Oct-11	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	20-Oct-11	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	20-Oct-11	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	20-Oct-11	COLIFORM (TCR)	0					
DRILLED WELL #1	20-Oct-11	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	28-Nov-11	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	28-Nov-11	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	28-Nov-11	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	28-Nov-11	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	28-Nov-11	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	27-Jan-12	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	23-Apr-12	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	20-Jul-12	COLIFORM (TCR)	0					

DISTRIBUTION SYSTEM	05-Nov-12	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	10-Jan-13	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	30-Apr-13	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	29-Jul-13	COLIFORM (TCR)	1					x
DISTRIBUTION SYSTEM	01-Aug-13	COLIFORM (TCR)	1					x
DISTRIBUTION SYSTEM	01-Aug-13	COLIFORM (TCR)	1					x
DISTRIBUTION SYSTEM	01-Aug-13	COLIFORM (TCR)	1					x
DISTRIBUTION SYSTEM	01-Aug-13	COLIFORM (TCR)	1					x
DRILLED WELL #1	01-Aug-13	COLIFORM (TCR)	1					x
DISTRIBUTION SYSTEM	06-Aug-13	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	06-Aug-13	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	06-Aug-13	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	06-Aug-13	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	06-Aug-13	COLIFORM (TCR)	0					
DRILLED WELL #1	12-Aug-13	COLIFORM (TCR)	1					x
DISTRIBUTION SYSTEM	15-Aug-13	COLIFORM (TCR)	1					x
DISTRIBUTION SYSTEM	22-Aug-13	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	22-Aug-13	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	22-Aug-13	COLIFORM (TCR)	0					
DRILLED WELL #1	22-Aug-13	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	16-Sep-13	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	16-Sep-13	COLIFORM (TCR)	0					

DISTRIBUTION SYSTEM	16-Sep-13	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	16-Sep-13	COLIFORM (TCR)	0					
DRILLED WELL #1	16-Sep-13	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	25-Sep-13	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	11-Nov-13	COLIFORM (TCR)	0					
DISTRIBUTION SYSTEM	05-Mar-14	COLIFORM (TCR)	0					
DRILLED WELL #1	27-May-10	E. COLI	0					
DISTRIBUTION SYSTEM	06-Aug-10	E. COLI	0					
DISTRIBUTION SYSTEM	25-Oct-10	E. COLI	0					
DISTRIBUTION SYSTEM	07-Feb-11	E. COLI	0					
DISTRIBUTION SYSTEM	04-Apr-11	E. COLI	0					
DISTRIBUTION SYSTEM	03-Aug-11	E. COLI	0					
DISTRIBUTION SYSTEM	17-Oct-11	E. COLI	0					
DISTRIBUTION SYSTEM	20-Oct-11	E. COLI	0					
DISTRIBUTION SYSTEM	20-Oct-11	E. COLI	0					
DISTRIBUTION SYSTEM	20-Oct-11	E. COLI	0					
DISTRIBUTION SYSTEM	20-Oct-11	E. COLI	0					
DRILLED WELL #1	20-Oct-11	E. COLI	0					
DISTRIBUTION SYSTEM	28-Nov-11	E. COLI	0					
DISTRIBUTION SYSTEM	28-Nov-11	E. COLI	0					
DISTRIBUTION SYSTEM	28-Nov-11	E. COLI	0					
DISTRIBUTION SYSTEM	28-Nov-11	E. COLI	0					

DISTRIBUTION SYSTEM	28-Nov-11	E. COLI	0					
DISTRIBUTION SYSTEM	27-Jan-12	E. COLI	0					
DISTRIBUTION SYSTEM	23-Apr-12	E. COLI	0					
DISTRIBUTION SYSTEM	20-Jul-12	E. COLI	0					
DISTRIBUTION SYSTEM	05-Nov-12	E. COLI	0					
DISTRIBUTION SYSTEM	10-Jan-13	E. COLI	0					
DISTRIBUTION SYSTEM	30-Apr-13	E. COLI	0					
DISTRIBUTION SYSTEM	29-Jul-13	E. COLI	0					
DISTRIBUTION SYSTEM	01-Aug-13	E. COLI	0					
DISTRIBUTION SYSTEM	01-Aug-13	E. COLI	0					
DISTRIBUTION SYSTEM	01-Aug-13	E. COLI	0					
DISTRIBUTION SYSTEM	01-Aug-13	E. COLI	0					
DRILLED WELL #1	01-Aug-13	E. COLI	0					
DISTRIBUTION SYSTEM	06-Aug-13	E. COLI	0					
DISTRIBUTION SYSTEM	06-Aug-13	E. COLI	0					
DISTRIBUTION SYSTEM	06-Aug-13	E. COLI	0					
DISTRIBUTION SYSTEM	06-Aug-13	E. COLI	0					
DISTRIBUTION SYSTEM	06-Aug-13	E. COLI	0					
DRILLED WELL #1	12-Aug-13	E. COLI	0					
DISTRIBUTION SYSTEM	15-Aug-13	E. COLI	0					
DISTRIBUTION SYSTEM	22-Aug-13	E. COLI	0					
DISTRIBUTION SYSTEM	22-Aug-13	E. COLI	0					

DISTRIBUTION SYSTEM	22-Aug-13	E. COLI	0					
DRILLED WELL #1	22-Aug-13	E. COLI	0					
DISTRIBUTION SYSTEM	16-Sep-13	E. COLI	0					
DISTRIBUTION SYSTEM	16-Sep-13	E. COLI	0					
DISTRIBUTION SYSTEM	16-Sep-13	E. COLI	0					
DISTRIBUTION SYSTEM	16-Sep-13	E. COLI	0					
DRILLED WELL #1	16-Sep-13	E. COLI	0					
DISTRIBUTION SYSTEM	25-Sep-13	E. COLI	0					
DISTRIBUTION SYSTEM	11-Nov-13	E. COLI	0					
DISTRIBUTION SYSTEM	05-Mar-14	E. COLI	0					

Count of TCR	48
Detections	9
% detections	19%
Overall risk rating	**Medium**

Risk factor 6 - Maximum nitrate-nitrogen concentration in the last 5 years

FAC NAME	COLL DATE	ANALYTE NAME	CONC.	Unit	Standard	Units	Standard Reference	Risk
DRILLED WELL #1	27-May-10	NITRATE	0.3	MG/L				
DRILLED WELL #1	07-Feb-11	NITRATE	0.26	MG/L				
DRILLED WELL #1	27-Jan-12	NITRATE	0					
DRILLED WELL #1	10-Jan-13	NITRATE	0.15	MG/L				
DRILLED WELL #1	05-Mar-14	NITRATE	0.16	MG/L				

Average	**0.17**
Maximum	**0.30**
Overall risk rating	**Low**